DOCUMENT RESUME

ED 043 523 SE 009 922

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TITLE The Philosophy of the Community College and Standards in a Mathematics Program.
INSTITUTION Miami-Dade Junior Coll., Fla.
PUB DATE Apr 70
NOTE 39p.; Paper presented at the Annual Meeting of the National Council of Teachers of Mathematics (48th, Washington, D.C., April 1-4, 1970)

EDRS PRICE EDRS Price MF-$0.25 HC-$2.05
DESCRIPTORS *College Mathematics, *Community Colleges, General Education, *Junior Colleges, Mathematics, Mathematics Education, *Objectives, *Philosophy

ABSTRACT

Characteristics of the Miami-Dade (Florida) Junior College are presented in this paper to describe the: (1) philosophy of the community college, (2) implications of this philosophy to the mathematics program, and (3) possible solutions to specific problems. Some of the areas needing reform are: (1) the mathematical training of technicians, (2) screening and placement of students, (3) mathematics for the general education student, (4) computer assisted instruction, (5) mathematics for preservice elementary teachers, (6) the remedial student in mathematics. This paper was presented at the 1970 Annula Meeting of the National Council of Teachers of Mathematics. (RS)

ED043523

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THE PHILOSOPHY OF THE COMMUNITY COLLEGE

AND

STANDARDS IN A MATHEMATICS PROGRAM

An address to the Junior College Section given by Keith W. Williams, Associate Professor of Mathematics at Miami-Dade Junior College, at the Annual Meeting of the National Council of Teachers of Mathematics, Washington, D. C., April 1970.

I. INTRODUCTION

In 1860 the Public High School in the United States was a new idea and by 1915 nearly every American community had a public high school. Now in the 1970's it looks as if almost every American community will have a community college within the next ten years.

Secretary of Labor Wirtz points out that ". . . the machine now has a high school education in the sense that it can do most of the jobs a high school graduate can do. So the machine will get the jobs, because it works for a lower wage." Robert J. Hannelly, President of the Maricopa County (Arizona) Junior College District, in addressing the Conference on Junior College Science Teaching concludes that, "A junior college education is necessary to compete with the machine."[1]

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1 Eiss, Albert F. (ed), Science Education in the Junior College National Science Teachers Association, Washington, 1966, Pg. 11 - 12.

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The twin forces of social pressure and economics make the continued growth and expansion of the junior college inevitable. Miami-Dade Junior College is typical of the tremendous growth of the junior college throughout the past decade. Even though Miami-Dade is larger than most junior colleges we have all of the types of problems to be found elsewhere. Perhaps the problems in some cases are magnified and in other cases reduced but the same problems are still present that are present in your own local junior college.

I will give you some facts on Miami-Dade not to unduly dwell on our college but to see it as an illustration of the growth of the community college. Miami-Dade started in 1960 with 1,428 students and in the past school year of 1969-1970 we have 29,375 students. Presently there are 894 full-time faculty members plus 250 part-time faculty members. In the school year 1969-70 some 3,884 foreign students representing 56 countries were enrolled. In 1968-69 Miami-Dade was second in the number of foreign students enrolled in institutions of higher education in the United States. First was NYU with 3,293, second was Miami-Dade with 3,084, Berkley was third and Columbia was fourth.

Almost 20% of our students are from out of state. So we have some of your students' problems also. Our program involves the certificate of graduation, the Associate of Arts degree which is the university parallel program, the Associate of Science degree which includes the technical and semi-professional, business studies, career programs, and allied health programs.

70% of the students at Miami-Dade are enrolled in the university parallel programs. There are two main campuses, the North Campus with an enrollment of 18,216 students and the South Campus with an enrollment of 11,159 students.

One out of every five technical students is enrolled in an aerospace program. More than 80% of our graduates go on to other colleges and universities. All of this is done at a total cost to the college of $750 per student per year.

By 1975 our enrollment is projected at about 39,000.

By 1980 our enrollment is projected at about 50,000.

I will touch on three main topics within the general heading of the Philosophy of the Community College and Standards in a Mathematics Program:

(1) Philosophy of the Community College.
(2) Implications of this Philosophy to the mathematics program.
(3) Problem areas and thinking towards solutions.

You might even say this will be a P-I-P of a talk, philosophy, implications and problems.

II. PHILOSOPHY OF THE COMMUNITY COLLEGE

First let's examine the reasoning that ushered in the community college. Our society assumes that each individual has the right to further his education as much as possible in terms of his own ability. Arthur J. Goldberg sums up the general tenor of such thinking when he said ". . . it is the duty of society to build an educational system which fits the abilities and fulfills the needs of each particular individual."[1] The community college is an instrument that seeks to fit the ability and the needs of each individual student.

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1 Goldberg, Arthur J., "Education for Freedom and Equality", Junior College Journal, XXXVI (Sept. 1965) p. 7.

In a very important conference on The Role of the Community College in Higher Education held at Lehigh University, November 21 and 22, 1965, Albert E. Meder, Jr. from Rutgers University who was chairman of the commission on Higher Education spoke with reference to the place of the community college in terms of our educational climate. He sought to give some of the essentials that constitute a community college. A community college serves a constituency which is the community in a well defined geographical area. The community college is a college and an institution of higher education. The community college is intended for adults. There is a pre-eminent concern with subject matter. The community college is concerned with both the breadth and depth of knowledge and is a community of scholars.[1]

We might pause at this juncture and ask about the usage of the terms two year college, junior college and community college. In an excellent book, The Two Year College: A Social Synthesis by Blocker, Plummer and Richardson, the authors give a definition. "Two-year colleges, . . ., can be defined as public or private junior colleges, comprehensive community colleges, college and university extension centers, two-year branch colleges, and technical institutes providing at least two - but less than 4 years of college-level work. The term "junior college" will be used to identify public or private two-year colleges, whose primary emphasis is upon college-transfer courses and programs. "Community college, . . . is a comprehensive public two-year college which offers post-high school

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1 Stoops, John A. (ed) The Community College in Higher Education (Bethlehem, Lehigh University, 1966) pp. 9 - 20.

education programs to meet the needs of the community." [1]

Since I believe that most so-called junior colleges will ultimately evolve into community colleges if they have not already done so, I will use the terms two-year college, junior college, and community college interchangeably to mean the community college.

One might ask in terms of the philosophy of the community college just what is its purpose. Crawford has stated that ". . . it is appropriate for community colleges to provide, for all persons above the 12th grade age level, education consistent with the purposes of the individuals and the society of which they are a part, subject only to the restrictions of state statutes." [2]

This purpose finds its way in various forms into the catalogs of the various two-year colleges. The school catalog of Miami-Dade states this in terms of its purpose. " . . . is a publicly-supported two-year community college which offers educational opportunities beyond the high school level. The instructional program is designed to prepare students to enter the upper division of senior colleges and universities or to make immediate entry into a career field." [3]

Thus the purpose of the community college is to provide education beyond the high school level in terms of a university parallel program or a career orientated program.

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1 Blocker, Plummer, and Richardson, The Two-Year College: A Social Synthesis (Prentice-Hall, Englewood Cliffs) p.23.

2 Crawford, Ferris N.,"A Twentieth Century Institution: The Community College" Address delivered at Southwestern College Agreement Conference, Battle Creek, Michigan, Nov. 16, 1961) p. 1

3 1969-70 Catalog, Vol X,No.1(Miami-Dade Junior College,Miami,Fla.) p.4.

What are the characteristics of a community college? The five fundamental characteristics of a two-year college as given by Fields will give us a good idea of the characteristics a community college should possess.

"(1) Democratic - low tuition and other costs; non-selective admission policies; geographically and socially accessible; and popularized education for the largest number of people.

(2) Comprehensive - a wide range of students with widely varying abilities, aptitudes, and interests; a comprehensive curriculum to meet the broad needs of such students.

(3) Community-centered - locally supported and controlled; local resources utilized for educational purposes; a community service improving the general level of the community.

(4) Dedicated to life-long education - educational programs for individuals of all ages and educational needs.

(5) Adaptable - to individual differences among students, differences in communities, and the changing needs of society." [1]

This is a good summary of those items that characterize a community college.

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1 Blocker, Plummer, and Richardson, op. cit. p. 35

We have examined the definition, purpose, and characteristics of the community college. Now let us think about its objectives.

Crawford has a list of five objectives that effectually challenges the community college.

"(1) Programs of liberal arts and science courses, usual to the first and second years of college, which will provide sound general and pre-professional education of such quality that credits may be transferred to a nationally or regionally accredited four year college or university and applied towards degrees of the baccalaureate level or higher.

(3) Vocational and technical programs in the trades, industrial, agricultural, and semi-professional fields.

(3) Programs of courses for adults and other community college students, for which credit may or may not be given, designed to provide general education and to improve self-government, healthful living, understanding of civic and public affairs, avocational growth, constructive use of leisure time, personal and family living satisfactions, cultural depth, and to facilitate occupational advancement.

(4) Individual services to students including guidance and counselling, assistance in career selection, removal of deficiencies in preparation for college programs, personality and health improvement.

(5) Programs and services for individuals and groups interested in cultural, civic, recreational, or other community betterment projects." [1]

In the state of Florida the objectives for the statewide network of community colleges is stated as:

"(1) That of providing a basic general education for all students.

(2) That of making available a program designed for transfer and/or to meet professional requirements.

(3) That of developing and encouraging students to enroll in an occupational (vocational-technical) program.

(4) That of providing to their own communities a community service program as well as a variety of continuing education for adults.

(5) That of providing a comprehensive community and guidance program." [2]

Thus the objectives of the community college cut across the university parallel, the technical and vocational, individual services (i.e. guidance, etc.), continuing education, cultural activities, basic general education, and co-curricular activities.

The final item that we will consider under the philosophy of the community college is the "Open Door Policy". This is a basic tenet of the philosophy of the community college and one which provides many of the

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1 Crawford, op.cit., pp. 1-2.
2 "Where Are They Now?" (A follow-up study of First-Time-In-College Freshman in Florida's Community Junior Colleges in Fall, 1966, Florida Community Junior College Inter-Institutional Research Council, November 1969) p. 2.

problems and the uniqueness of the community college.

At Miami-Dade the admission statement of policy says, "Admission to college credit studies is open to high school graduates, transfer students and persons 19 years of age or older." [1]

William T. Mooney, Jr., Dean of the Division of Physical Sciences at El Camino (California) College, in his address "New Approaches in the Physical Sciences in the Two-Year Colleges" has some interesting comments on the "Open Door Policy".

"The term 'open door' means that entry into college is unrestricted. Many courses and curricula are available - some within the range of the student's interests and ability, some outside his interests, and some beyond his ability. He need not choose what lies outside his interest, and he should not be allowed to choose that which clearly lies beyond his ability. The open-door college does not mean an open-door curriculum. It presupposes a variety of curricula to match the potential of a variety of students and the establishment of standards to maintain the integrity of the institution."[2] We ought to remember this last phrase "establishment of standards to maintain the integrity of the institution." We need to meet the needs of the students but not at the altar of lowered standards for established programs.

Thus in terms of the philosophy of the community college: its <u>purpose</u> is education beyond the high school level in terms of university parallel or career orientated programs; its <u>characteristics</u> are democratic, compre-

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1 1969-70 Catalog, <u>op. cit.</u>, p. 11
2 Eiss, <u>Op. cit.</u> , p. 17

hensive, community centered and adaptability; its objectives encompass the university parallel, technical vocational and all the way to continuing education; its admission policy is "open door" with no restrictions if you are old enough and breathing.

The community college certainly is unique and meets the Zeitgeist of this day and age.

III. IMPLICATIONS OF THIS PHILOSOPHY TO THE MATHEMATICS PROGRAM

The first item has to do with the "open door" policy. We might ask open door to what? -- Open door to failure? -- Open door to opportunity?

In terms of student ability almost 1/3 of the student population is already weeded out. Studies made in '61 and '62 have shown that almost 1/3 of the population 17 years of age did not graduate from high school.[1] Thus, supposedly, this 1/3 would consist of those students who had low ability levels. Take a look at Chart #1. Here you will see that we have the proportion of public high school programs devoted to subject matter areas by pupil-ability level. Note that the lower the ability level the percentage of mathematics in the student's program is lower. This means that the mathematical background of the lower ability level student is not sufficient for college credit mathematics courses. Of course this would seem to be a self-evident truth but many people do not realize that it takes background in the subject matter to be able to be successful in mathematics. Mathematics courses are on various step levels and only the high ability student is able to jump a level.

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1 Blocker, Plummer, and Richardson, op. cit., p. 110

Here at Miami-Dade we have an extensive financial aid program which ensures that we have students of many different ability levels. There is a complete waiver of all tuition for students whose family incomes meet the federally-established poverty level. Scholarships, grants-in-aid, work-study programs, and loans are provided for Miami-Dade students. In the school year 1968-69 some 12,900 students were helped at a total cost of $3,409,279.[1] You might say we pay over one third of our students to come to Miami-Dade.

Biographical characteristics of our students show again that we have a wide range of background in our student body. 30% of the students are 18 years old or under, 19% are 19, 11% are 20, while 10% are over 30.[2] Thus there is a wide variety in age level which means that the retention level of previous mathematics courses will vary according to the number of years that have elapsed since the last mathematics course was taken.

52.1% of Miami-Dade students enter college directly from high school, 5.3% have transferred from a four year college or university, 2.8% have transferred from a two year college, 9.1% have had military experience between high school and college, while 23% have worked one year or more before going on to college after high school.[3] This means that we have a wide variety of maturity and backgrounds. Maturity level seems to be a factor in having success in mathematics.

Miami-Dade's admission policy states that we accept all high school

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1 Tombrink, E, "News Release"(10/3/69, Office of Information Service, Miami-Dade Junior College, Miami, Fla.) p. 1.
2 Sutton, C.D."Biographical Characteristics of Students Enrolled at Miami-Dade Junior College, North Campus, Fall Term 1969-70(Miami-Dade Jr.Col),p.5.
3 Ibid., p. 13.

graduates, all state equivalency diplomas, all transfer students, and all over 19 with no diploma as a special student. The testing given at the time of admission is only for counseling and placement and even this is waived if the applicant is over 22 years old.

Koos made a study in 1945 of the junior college in Illinois. He found that where there was not a junior college in the community only 19.7% of the high school graduates went on to college. However, 53.5% of all high school graduates attended college when the junior college was present. In addition 46.7% of the high school graduates of lower economic status were found to be attending college when a junior college existed in the community.

Another problem especially for placement in mathematics courses stems from the student's over-evaluation of himself. A questionnaire was given to our entering students and one of the questions was, "I believe I could be the following kind of a student: highly superior, above average, average, below average, extremely poor." The answers indicated that this is how the students evaluated themselves: 6.5% highly superior, 50.9% above average, 38.9% average, .6% below average, .3% extremely poor, 2.7% not indicated. Thus, 56% believed that they could be above average or highly superior students. While less than 1% believed they could be below average or extremely poor students.[1] Yet on the Florida Statewide Placement over 79% of these entering students would not be able to meet the prerequisites for taking college algebra in terms of the criteria that we used in 1964.[2]

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1 Sutton, C. D., op.cit., p. 13.

2 (Memorandum, Feb. 6, 1969) "Miami-Dade Junior College, Distribution of Total Percentile Scores on the Florda Statewide Twelfth Grade Test for 6,072 newly entering students at Miami-Dade Junior College, Fall Term, 1968 - 69."

Thus, the "open door" policy created problems because of the greater range of ability level, wide range of ages, variety of background both cultural and educational, and the over evaluation by the individual as to his ability.

Because of the tremendous growth of the community college there is the subtle pressure of numbers. In 1963-64 Miami-Dade enrolled 6,138 students while in 1965 we graduated 1,029 students, about 17%. In 1967-68 we enrolled 23,341 students, but in 1969 only 3,483 graduated, about 15%. Of course, many students take more than two years to graduate and some of those who could graduate do not file for graduation, but simply transfer to the four year institution. Others are employed before their degree requirements are met.

However, we might ask, "Is this the opportunity to fail?" Our Director of Institutional Research, Gustave G. Wenzel, made a study of the attrition rates for 1964 and 1965. This attrition rate includes those students who withdrew from the course and those students who received an F. (See Chart II) Notice the prevalence of Mathematics courses in the upper level of attrition. Meetings of the faculty were called and the entire faculty was made aware of the attrition rates. However, at no time was any direct pressure brought to bear on the mathematics department by any member of the administration to lower the standards in our mathematics program.

Chart III gives the rank order of attrition rates by departments. Accounting is the only department above Mathematics. However, Mr. Wenzel

noted with respect to the Mathematics Department, "It is also appropriate to point out the significant reduction that has been accomplished in one year in the attrition rate which is down 13.5 percent, the second largest reduction in the college, and the largest of any major department."[1] These items were presented to the faculty as a statement of cold facts and no pressure was brought to bear to lower the standards.

However, the reduction in the attrition rate resulted in part from these items:

(1) The GSM 061 course is a remedial math course on the level of 9th grade general education mathematics. The course was number four in rank of attrition. The course was split into two levels -- GSM 061 (Arithmetic) and GSM 062 (Elementary Algebra). This meant that there was more attention to ability level and level of abstraction. In turn, this reduced the attrition rate in Math 100 (Beginning Algebra) by giving these students another course choice and by helping their background in algebra.

(2) NSC 101 (General Education Mathematics) had the most dramatic decrease in attrition rate. This was in part due to a change in methods but was mainly the result of making this course a sophomore course. The greater the maturity level, the more chance for success in mathematics.

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1 Wenzel, G. G., "Analysis of Grade Distribution, Fall Term 1965-66" (March 3, 1966, Memorandum) p. 3

(3) The individual teachers in the mathematics department made a close check of the individual student's math background and changed him to another class if the student's math background did not meet the requirements of the course. Unfortunately many students get in the wrong course.

(4) Also there was an emphasis on the student's previous math courses as a prerequisite rather than the SCAT score. The SCAT scores did not show whether a student would or would not have success in a mathematics course. One of the most important items in mathematics success rests on the courses already taken in mathematics.

I have made a study of the attrition rates in mathematics for fall 1965 through fall 1969. See Chart IV. Here I have included the W's, F's, and also those who dropped out after registering for a class. As a result the percentages are somewhat higher than they would be if recognition was made of those students who changed their mind before coming to class. However, the chart shows that there is a significant attrition rate.

Some of the weak spots are these: MATH 100 (Beginning Algebra) -- the main reason for this is the weak Algebra I background of the students; MTH 091 (Remedial Algebra) -- the ability level of the student is so low that new techniques of instruction need to be found; MTH 110 (College Algebra) -- here the student is inadequately prepared in basic algebraic manipulation and falls apart at the mere mention of "proof." There was a significant increase

in the attrition rate when a textbook was introduced which required the student to prove some basic concepts. Perhaps the course should be increased to an additional hour or two per week or else another introductory course could be introduced: MTH 111 (Trigonometry) -- here again the students fail because of a lack of algebraic ability; MTH 121 (Technical Math) and MTH 221 (Technical Calculus) -- here the ability level of the student is the determining factor.

The Survey of 1964 and 1965 that was presented by the Director of Institutional Research did, however, play a part in the reduction of the Natural Science requirements for general education at Miami-Dade.

As far as the definition of General Education in terms of General Education Science, the National Science Teachers Association has this excellent critique that can also be applied to mathematics: "Objectives of General Education Science for non-science majors in the numerous junior colleges are widely diversified. They are dependent upon the objectives of the individual institutions, the course objectives formulated by the faculties, the instructional facilities available, the transfer requirements of home state universities, the budget, the size of the student body, and the experience, dedication, and background of those involved with the actual classroom instruction. The junior college of small or limited enrollment may find it necessary to offer introductory courses in science with a two-fold purpose (1) the initiation of science training for science majors and (2) the accomplishment of their general education mission for non-science majors. Larger institutions

separate -- others experiment widely with innovation.[1]

In the Miami-Dade catalog with reference to the General Education program, it states, "The objective is development of critical thinking, effective communication, self-understanding and satisfying human relationships.[2]

There is a General Education compact among the Florida Junior Colleges which stipulates that each junior college graduate should have a minimum of twelve semester hours in General Education. These hours should be distributed equally among English, Humanities, Social Science, and the Natural Sciences. Mathematics is considered in the area of the Natural Sciences.

Miami-Dade through 1964 required its graduates in Academic Studies to have forty hours of General Education courses with twelve hours in the Natural Sciences. The twelve hours in Natural Science required a three hour General Education Mathematics course.

Now the General Education requirement at Miami-Dade has been reduced by only two hours to thirty-eight hours which far exceeds the minimum required in the General Education compact. However, there is now required only six hours of Natural Science with any two out of these four courses acceptable:

BIO 102 - General Education Biology
PHY 104 - General Education Physical Science
GEL 106 - General Education Earth Science
MTH 201 - General Education Mathematics

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1 Eiss, op. cit., p. 34.
2 1969-70 Catalog, Vol. X, Number 1 (Miami-Dade Junior College, Miami, Fla.) p. 45.

The junior colleges of Florida have an agreement with the State Universities which states that, "All students who complete the General Education requirements in the area of University Parallel studies, and who receive the Associate in Arts Degree will be exempt from the General Education requirements of these senior universities."[1]

Thus, it is possible for a graduate of Miami-Dade Junior College to graduate without having one mathematics course. If that student goes on to the four year school in a program that does not require mathematics, then we have a college graduate with no college credit in mathematics.

A few years back one of our administrative officials at Miami-Dade felt that the prerequisite of a "C" in the previous course for entry into the next course was not justified. No definitive study had been made of this prerequisite and thus he was right in questioning its validity. Especially in the junior college we need to have an open mind and seek to test our previous ideas and concepts in the realm of education. Thus, the requirement of a C was dropped for a year and those students with a D were allowed into the next course.

A committee of the mathematics faculty then made a comparative study of the attrition rate for the C and D students. (See Chart V) Notice there is a very definite difference in attrition rates from MTH 091, 74.2% for D students and 38.7% for C students; from MTH 100 with 71.7% for D students and 41.9% for C students; from MTH 111 with 85% for D students and 40.5%

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1 1969-70 Catalog, vol. X, Number 1, (Miami-Dade Junior College, Miami, Florida) p. 45.

for C students; from MTH 112 with 85.6% for D students and 42.1% for C students; from MTH 240 with 100% for D students and 39.2% for C students.

The summary shows that of those who had a D and went on to the next course, 74.18% either had a W or F, while those with a C only 49.9% received W or F. These are decisive results and thus the prerequisite, rightfully so, went back to a C grade in the previous math course.

There are one hundred ten identifiable degree programs at Miami-Dade. Forty-eight of these programs lead to the Associate of Arts degree. To qualify for the A. A. one needs to meet the requirements of one of the university parallel programs and to possess a grade point average of 2.0 or better. As we have seen, it is possible for the Associates in Arts not to take any mathematics.

For the Associate in Science degree there are forty-seven technical and career programs and fifteen paramedical. No mathematics is required in at least twenty one of these degrees. Others require only some of the following: MTH 121, 122, 201, 110, 221, or Business Math.

In general, the implication of the philosophy of the Community college for mathematics means that with the "open door" policy student ability takes on new meaning. The pressure of numbers is being felt and this in turn, coupled with the "open door" policy, plus the large attrition rate, means that more study should be made as to the specific reasons for such a rate. Also, in the context of the philosophy of the Community college it would seem

as if we are doing students a disfavor to allow them to graduate as mathematical illiterates.

IV. SOME PROBLEM AREAS AND DIRECTION TOWARD SOLUTION

A. Technical Mathematics

This is the area of the Associate in Science Degree which includes such programs as Transportation and Traffic Management, Police Administration, Aero Technology, Air Conditioning and Refrigeration, Fashion Design, Hotel-Motel Management, Medical Technician, and Respiratory Therapy Technician. Here is the opportunity for the community college to make a unique contribution. The need for technicians is increasing two to six times more rapidly than is the need for professionals. Two items need to be taken into account with reference to this area: (1) the overriding factor of change and (2) a faculty which is flexible that can respond constructively to change.

The U. S. Office of Labor has compiled information to the effect that 2/3 of the skilled and semi-skilled job opportunities are not available to those who lack an understanding of the basic principles of arithmetic, elementary algebra, and geometry.

The Two Year College Committee of the NCTM has proposed that a Vocational-Technical Mathematics Committee be appointed to study the nature of the mathematics required in the next five years by persons to be trained in the junior colleges to enter an occupation (plumbing, carpentry, printing,

etc.) or to serve as a technician (dental, electronic, computer, chemical, engineering, etc.) The vocational-technical studies in the junior college is a rapidly growing area which has been in a large part neglected by trained mathematicians. Some of the items that the committee could consider would be: (1) Survey the curriculum practices and projections at the junior college level through contact with deans of technical-vocational education in junior colleges and their counterparts in the technical institutes of the eastern U. S., (2) Examine the studies on the training of engineering aides made by the American Society for Engineering Education, (3) Examine the studies of the medical and dental association in such areas as dental assisting, the training of nurses aides, and LPN's, (4) Survey the requirements of the electronics and aero space industry for technicians.[1]

B. Mathematics Screening Test

There is a real need for a test that will screen prospective mathematics students so that they will be channeled into a mathematics course where they will have a reasonable chance for success. An interesting article in The Mathematics Teacher, March 1970 by William P. Morgan called the "Prediction of Success in Junior College Mathematics" uses a regression equation to predict success in junior college mathematics. The Cooperative Mathematics Test (Educational Testing Service) Form A, Algebra II is accurate only to about 50 per cent in terms of success where a raw score of 15 or better would allow the student to take the college algebra course. Basing his work on some earlier work by Anderson, Weaver, and Wolf in 1965, Morgan

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1 Annual Report of the Two-Year College Committee, Feb. 1970, National Council of Teachers of Mathematics, p. 12.

came up with a regression equation of V = .01602799 A + .09726042 B + .19494335 C - .00494199 D where

A = score on the Cooperative Math Test
B = number of years of academic high school math
C = mean grade point average in high school math
D = age in months beyond the 17th birthday

With a critical score of .79589 this regression equation was 90 per cent accurate in its prediction of success.[1]

Our own attrition rate here at Miami-Dade indicates the need for such an instrument. The Two Year College Committee of the NCTM has urged that a committee be appointed to develop a test suitable for placing students in pre-college algebra courses. This test should differentiate among students for whom the appropriate course is beginning algebra, intermediate algebra, and college algebra.

"One of the major problems continuing to face departments of mathematics in junior colleges is the placement of students into the right course. As the number of students entering junior colleges is increasing, this problem is becoming more critical. Since proper placement helps serve the mathematical needs of students, it should be important to the NCTM." [2]

C. General Education Mathematics

General Education Mathematics should not be eliminated from the A. S. degree but it has been eliminated. Why? Is it because it is not

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1 The Mathematics Teacher, Vol. IXIII, No. 3,NCTM, Washington, pp 260 - 263.
2 Annual Report of the Two Year College Committee, op. cit., p. 11.

relevant? Is it because it is not necessary? Perhaps the comment of W. T. Mooney, Jr. might reflect on this subject. "Many of our present courses, especially for the non-science major, can be indicted on two major counts: (1) They deal with many unimportant topics, and (2) they are often a fragmented series of pieces held together only by the glue on the spine of the textbook." [1]

Again, the Two Year College Committee has asked for a committee to formulate a mathematics course(s) on the two-year college level for non-science or non-mathematics majors.

"The TYCC feels that the focus of such a course should be on a cultural approach rather than a remedial or basic skills approach. Such a course should be appropriate for all students including those who are associate degree candidates (whether or not they plan to transfer)." [2]

D. Computer Assisted Instruction

J. O. Luck, Head of Educational Training, Murrey Hill (N.J.) Lab., Bell Telephone Co. in an address to science educators said, "We can help prepare students for full participation in the automated society by encouraging data processing and programming instruction wherever feasible. No student should be leaving junior college without being able to utilize a computer as an aid to his work. It will not be long before all employees, starting with secretary and clerk and going right up the line will need to be able to work with these data-processing machines." [3]

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1 Eiss, op. cit., p. 22.
2 Annual Report of the TYCC, op.cit., p. 8.
3 Eiss, ibid., p. 3.

At Miami-Dade members of the mathematics department are getting acquainted with the APL language with a console that is hooked in with a computer in Ft. Lauderdale. To us Ft. Lauderdale is where the computer is and not where the boys are. We are looking forward to computer assisted instruction in some of our Math courses.

E. Mathematics for Preservice Elementary Teachers

The Two Year College Committee recognizes this as an area of concern and has made a recommendation for a study committee. In the TYCC Annual Report for 1969-1970 the rationale for such concern is given. "About ten of the two-year colleges now offer a mathematics course for prospective elementary teachers. As society asks more of these emerging institutions, the two-year colleges are looking for the unique role they can play in teacher training...In many states, the majority of prospective K-8 teachers will receive their first year of math at a two-year college. A relevant course taught by competent mathematicians would provide the appropriate mathematics content as well as early career counselling and recruiting opportunities." [1]

F. Faculty Scholarship and Understanding

We need to tend to our own scholarship or else we will lose the vitality needed for the faculty of a community college. We need to understand the philosophy and purpose of the community college else we will be condemned to discouragement and frustration. The indictment by Leland L.

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1 Annual Report of the Two Year College Committee, op, cit. , p. 10.

Medsker I am afraid is all too true when he said, "To date, neither the community college curriculum nor the techniques of instruction have changed materially." Joseph P. Cosand in his Implications of Urbanization for Community College Administration wrote, "Faculty members must be able, for example within the Mathematics Department in the community college, to give just as much support to our remedial courses in math as to a course in differential equations." [1]

In the community college we need a vigorous program of educational research.

G. Remedial Mathematics

This is a field where basic research ought to be done in terms of learning theory and techniques of instruction. These students have been exposed to mathematics for twelve years but still have not comprehended. The usual methods of instruction just will not work with these students.

H. Summary

These are a few of the problem areas and there remains the major part of the task ahead. Within the context of the philosophy of the community college there is much latitude in the means and methods of solving these problems.

V. CONCLUSION

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1 Martarana & Hunter (ed),"Administering the Community College in a Changing World". UCEA, Buffalo, p. 71.

We might ask questions such as posed by the title of the article in The Saturday Review, "Are we Educating Our Children for the Wrong Future?" Or, open door to what? Success or failure? Dr. Conant has said, "Educational experiences are like threads woven in a fabric; to attempt to judge them is to falsify the picture."

We have picked out some threads here and there and much has been left unsaid. But I am encouraged as I look at the infant "Two-Year College Mathematics Journal" and see an article by Gail Young, President of the MAA, "Providing a Better Mathematics Education" [1] which shows insight into the problems of the two-year college. And then an article in the same journal by June Wood, "First-Year Mathematics - A Challenging Variable" on the concern for and ways of overcoming the attrition rate. Her final conclusion, "The results of our investigation support the philosophy that any junior college which maintains an open-door policy accepts the responsibility for providing students with courses in which they have a reasonable chance to succeed." [2]

Thus we here examined the Philosophy, Implications, and Problems of the Community College in terms of the mathematics program. Perhaps we could use the first letters P-I-P and say we hope that it will lead to a Professional Improvement Program.

The philosophy of the community college and the mathematics programs of the community college have not yet met on a common understanding. Progress is

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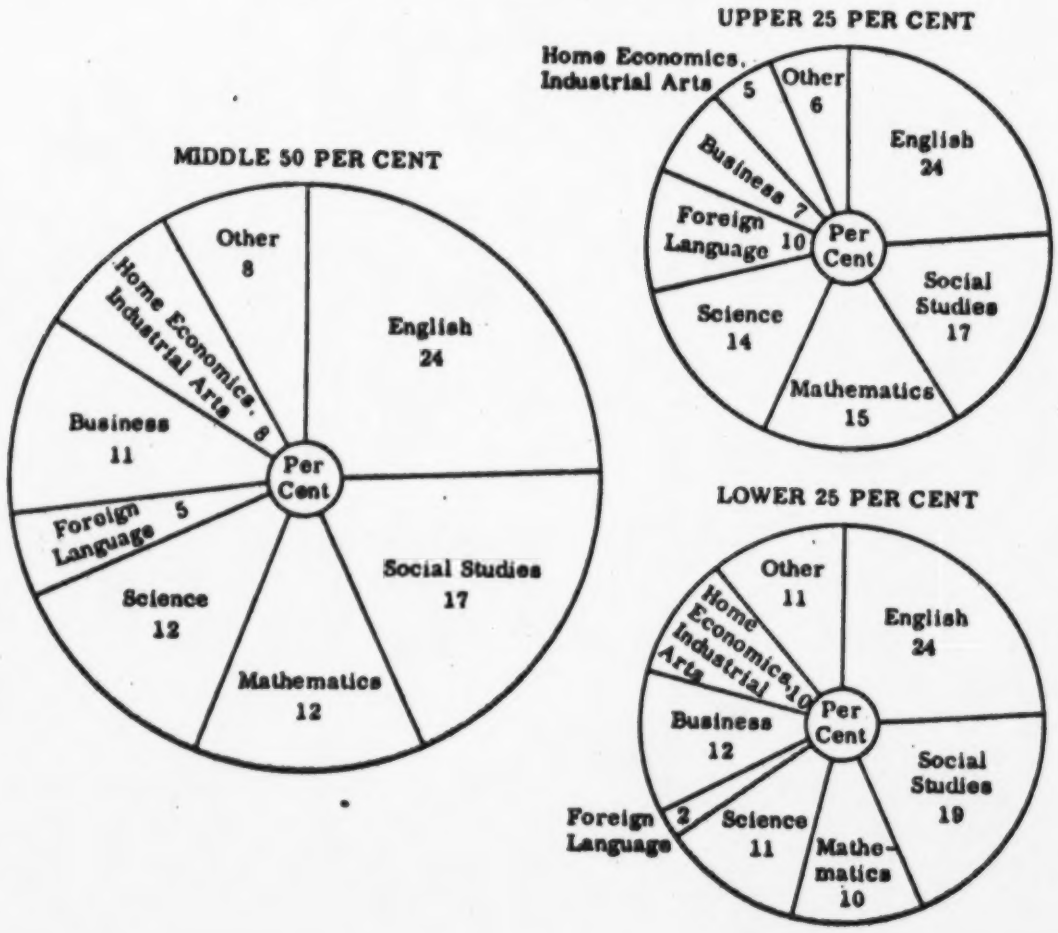
1 Young, Gail S. "Providing a Better Mathematics Education,"The Two-Year College Mathematics Journal,Vol 1,No.1,(Spring 1970) pp. 4 - 7.

2 Wood, June R.,"First-Year Mathematics - A challenging Variable", The Two-Year College Mathematics Journal, Vol.1,No.1 (Spring 1970), pp. 8 - 12.

being made but all too slow and not enough. The community college is an educational frontier and we need men with educational research ability to blaze the path that can be found in the forest of university parallel, technical and vocational, allied health, community service and continuing adult education. We need men of understanding, men of wisdom, men of vision, men of compassion, men of scholarship, men of tenacity to make this concept of the community college one of reality and not of words.

CHART I

Proportion of Public High School Programs Devoted to Certain Subject-matter Areas, by Pupil-ability Level, 1957-58*



* NOTE: Data are for the United States excluding Alaska and Hawaii and the District of Columbia

Chart is from:

Blocker, Plummer, and Richardson, The Two-Year College: A Social Synthesis, Prentice-Hall, Englewood Cliffs, p. 111 based on "What High School Pupils Study." Washington, D.C.: USGPO, 1962

CHART II

TABLE II
North Campus Only

RANK ORDER LISTING OF CERTAIN SELECTED COURSES
IN ORDER OF ATTRITION RATE SHOWING GRADE DISTRIBUTION
FOR FALL 1965-6 AND ATTRITION RATE FOR 1964-5
IN PERCENTAGES OF ORIGINAL ENROLLMENT (O.N.)

COURSE	O.N.	A	B	C	D	F	AU & I	ATTRITION RATE 1965	1964
MTH 100	568	4.2	12.7	20.2	15.7	20.6	0.7	46.4	60.6
ACC 181	911	9.8	13.5	20.5	13.1	22.2	1.3	41.8	53.5
CHM 100	299	3.7	11.4	24.4	19.4	23.4	0	41.1	54.9
GSM 061	475	4.2	16.4	21.3	20.0	19.4	0	38.1	48.6
MTH 230	165	6.0	15.8	26.0	15.2	17.0	0	37.0	48.4
CHM 102	155	2.6	9.7	27.1	23.2	11.6	0.7	36.7	23.5
MTH 110	555	5.0	16.7	28.0	15.5	15.7	0	34.8	57.3
MTH 112	186	8.1	15.6	28.5	15.1	13.5	0.4	32.3	43.3
MTH 225	185	4.9	13.0	35.7	14.6	13.5	0	31.8	39.9
GSW 100	1398	1.7	14.8	34.0	17.2	18.6	1.5	30.8	9.6*
MTH 121	396	10.1	20.5	25.3	13.1	12.6	0.4	30.6	55.6
BUA 105	464	8.8	14.7	29.5	17.0	19.2	0.2	29.8	39.6
MTH 240	122	11.5	16.4	26.2	15.6	9.0	0.8	29.5	30.2
COM 201	259	19.3	19.7	23.9	5.8	5.8	2.0	29.3	30.3
BIO 182	158	7.6	13.9	29.7	20.3	9.5	0	28.5	48.3
MTH 111	168	9.5	16.1	25.6	20.8	7.7	0	28.0	51.4
CHM 101	391	4.9	13.8	28.9	24.3	8.2	0.7	27.4	40.0
SPE 105	457	10.5	27.8	30.2	4.4	5.9	0.2	26.9	30.1
GSW 061	625	3.8	19.7	38.9	11.8	14.4	0.8	25.0	20.6
NSC 101	327	8.9	20.5	31.8	13.8	4.6	0.2	24.8	47.7
NSC 102	1288	6.7	14.4	42.2	10.9	3.5	1.0	24.8	23.9
ART 101	151	6.0	23.2	42.4	4.0	15.2	0	24.4	24.4
GSR 061	1240	8.4	15.6	14.7	36.9	14.1	0.5	23.9	19.7
SSC 102	976	7.6	21.2	32.6	14.3	11.5	0.5	23.8	27.5
SSC 101	3269	6.8	16.7	34.2	18.4	11.9	0.5	23.4	24.7
MTH 241	31	6.5	22.6	32.2	16.1	6.5	0	22.6	18.2
COM 102	1019	11.3	24.5	31.5	9.3	8.9	1.1	22.3	41.7
HUM 201	2501	8.2	18.4	34.2	16.7	14.4	0.4	22.1	21.3
BIO 181	229	6.1	20.5	34.1	17.9	9.6	0	21.4	33.5
HUM 202	1086	9.5	17.6	35.5	16.5	12.3	0.2	20.7	25.5
MTH 122	54	13.0	31.5	25.9	9.3	13.0	0	20.3	38.0
NSC 201	1155	6.7	19.2	35.6	18.2	9.6	0.1	20.2	26.0
GSR 100	716	12.0	28.6	28.1	10.5	11.6	1.0	19.8	12.8
COM 202	82	11.0	30.5	32.9	4.9	6.1	1.2	19.5	25.4
HIS 201	585	9.6	22.6	34.9	13.8	8.3	0	19.1	19.6
PSY 205	716	10.9	21.8	39.7	8.4	8.9	0.2	19.0	26.2
COM 101	2719	5.0	20.9	38.8	14.4	7.4	2.9	18.0	35.0
REA 120	327	20.5	24.8	29.7	6.7	7.6	0.6	17.7	15.9

1/24/66 *GSW had increase in enrollment last year due to administrative shifts from COM 101 and GSW 061

TABLE II
RANK ORDER LISTING OF CERTAIN
SELECTED COURSES
Page 2

COURSE	O.N.	A	B	C	D	F	AU & I	ATTRITION RATE 1965	ATTRITION RATE 1964
NSC 202	881	5.8	20.5	39.4	16.1	6.4	0.7	17.5	14.2
CHM 201	76	11.8	17.2	26.3	28.9	6.6	0	15.8	12.5
EDU 101	817	11.3	21.7	40.8	10.5	4.9	0.5	15.2	22.7
HIS 202	225	11.6	18.2	35.1	19.6	7.1	0.4	15.1	22.1
ECO 201	396	5.6	15.4	49.0	16.7	6.1	0.7	12.6	14.0
CHM 105	369	10.8	23.8	40.4	14.2	3.0	0	10.8	12.5
BIO 206	316	14.6	34.2	30.1	10.8	4.1	0.8	9.5	15.5
PED 101	185	10.2	35.7	42.7	2.2	4.3	0	9.2	6.6
CHM 106	228	14.0	28.1	46.9	5.3	1.3	0	5.7	11.4
MTH 221	12	8.3	41.7	41.7	8.3	0.0	0	0	25.0

GGW:vls
1/24/66

CHART III a

TABLE VI
North Campus Only

RANK ORDER LISTING OF DEPARTMENTS
IN ORDER OF ATTRITION RATE SHOWING GRADE DISTRIBUTION
FOR FALL 1965-6 AND ATTRITION RATE FOR 1964-5
IN PERCENTAGE OF ORIGINAL ENROLLMENT (O.N.)

DEPARTMENT	O.N.	A	B	C	D	F	AU & I	ATTRITION RATE 1965	1964
Accounting	1442	10.3	16.3	21.4	12.4	17.9	1.3	38.3	45.7
Mathematics	3532	6.5	16.6	25.8	15.8	14.6	0.3	35.0	48.2
Foreign Language	772	15.8	21.8	18.7	9.6	9.6	1.3	32.8	34.5
Secretarial Science	808	13.1	20.5	21.7	11.1	15.6	2.0	31.6	34.6
Literature	600	14.2	24.8	22.3	8.7	14.2	1.2	28.8	16.3
Air Conditioning & Refrigeration	25	4.0	12.0	36.0	20.0	8.0	0	28.0	43.7
Engineering Graphics	597	9.5	19.9	32.8	11.2	11.2	0.3	26.3	35.9
Electronic Data Processing	1181	11.6	19.6	29.4	12.5	13.4	1.5	25.4	26.6
Marketing	360	9.7	28.3	27.8	9.2	10.0	0	25.0	31.9
Hotel-Motel Management	61	29.5	31.2	9.8	4.9	4.9	0	24.6	+23.3*
Physical Science	1567	7.8	16.5	40.2	10.4	4.0	1.1	24.0	25.4
Business Administration	2027	11.0	22.1	30.5	12.2	10.7	0.4	23.8	32.3
General Education Social Science	4245	7.0	17.7	33.8	17.5	11.9	0.5	23.5	25.2
Radio & Television	17	11.8	11.8	35.3	17.6	17.6	0	23.5	#
Civil Engineering	214	15.0	24.8	30.8	5.6	10.7	0.9	22.9	19.1
Communications	6102	5.8	20.0	35.8	13.4	10.9	2.1	22.9	30.2
Interior Design	109	9.2	20.2	23.9	10.1	14.7	13.7	22.9	15.0
Graphic Art Science	89	11.2	22.5	30.3	11.2	6.8	2.3	22.5	+36.8*
Electronics	380	17.6	21.1	29.5	9.2	11.9	0.2	22.4	21.0
Mechanical Technology	94	16.0	22.3	31.9	7.5	9.6	0	22.3	25.7
Speech, Journalism & Drama	779	12.7	30.2	29.3	5.1	4.5	0.6	22.1	25.7
Engineering	260	13.0	27.7	26.2	10.8	11.1	0.4	21.9	32.6
Reading	2283	11.3	20.9	21.0	24.3	12.4	0.8	21.7	18.1
Earth Science	2479	6.9	18.6	35.3	17.6	7.9	0.5	21.1	27.6
Philosophy	292	22.9	30.1	18.5	7.2	7.9	1.1	20.2	23.4
Fine Arts	4831	11.9	21.1	32.9	14.2	12.1	0.3	19.6	20.4
Management & Supervision	454	14.3	30.0	29.3	6.8	9.6	0	19.6	21.4
Biology	1980	8.0	21.5	34.6	16.6	8.3	0.5	18.8	26.6
Aerospace	1849	8.1	26.9	29.7	10.9	5.5	6.2	18.2	20.9
Physical Education	4108	16.2	30.5	31.6	4.2	6.2	0.2	17.3	16.6
Architectural Technology	294	11.6	25.9	37.1	7.8	9.5	0.6	17.0	19.9

CHART III b

TABLE VI Continued
RANK ORDER LISTING BY DEPARTMENTS
Page 2

DEPARTMENT	O.N.	A	B	C	D	F	AU & I	ATTRITION RATE 1965	ATTRITION RATE 1964
Fashion Design	366	17.5	27.0	29.3	8.5	10.1	0.8	16.9	16.2
Psychology & Education	2327	13.8	23.7	38.0	9.2	5.9	0.4	14.9	20.7
History & Political Science	2520	11.1	26.2	36.7	11.1	7.0	0.5	14.4	19.7
Library Technical Aid	7	28.6	42.8	0	14.3	0	0	14.3	#
Police Science & Criminology	523	20.1	34.6	27.2	6.3	6.7	0.1	11.7	9.9
Nursing	166	12.7	42.2	29.5	3.6	0.6	0.6	11.4	9.4
Mortuary Science Technology	188	10.6	36.2	35.7	6.9	3.7	0	10.6	36.0
Home & Family Life	190	18.9	35.8	32.1	1.6	2.1	2.1	9.5	9.2
Food Service Management	70	22.9	37.1	28.6	1.4	4.3	1.4	8.6	#
Orientation	4055	5.0	23.1	44.1	7.8	0.3	12.4	7.6	#
TOTAL NORTH CAMPUS	54243	10.0	22.2	32.5	12.3	9.3	1.8	21.2	26.9

* Actual gain in enrollment because of increase posted after late registration.
\# Either not offered or no students enrolled Fall 1964-5.

Note: Instrumentation and Municipal Public Administration either not offered or no students enrolled Fall 1965-6.

GGW:vls
2/7/66

CHART IV a

ATTRITION RATE

COURSE	Fall 65 O.E.	Fall 65 A.R.	Fall 66 O.E.	Fall 66 A.R.	Winter 67 O.E.	Winter 67 A.R.	Fall 67 O.E.	Fall 67 A.R.
		%		%		%		%
MTH 100	617	51	580	46	475	49	640	43
MTH 090	524	24	479	29	160	36	393	21
MTH 091	261	40	229	37	167	37	280	50
MTH 110	536	32	664	42	561	33	746	49
MTH 111	165	17	200	29	289	44	238	28
MTH 112	192	35	196	24	110	33	220	37
MTH 121	387	30	471	38	453	40	625	47
MTH 122	54	20	56	45	135	41	-	-
MTH 201	327	24	427	20	540	20	589	25
MTH 203	6	17	16	25	40	25	65	37
MTH 210	-	-	-	-	15	27	-	-
MTH 221	12	0	34	18	15	20	26	15
MTH 225	179	30	178	44	210	39	132	43
MTH 230	165	37	209	35	286	46	219	47
MTH 240	122	30	175	30	142	26	163	39
MTH 241	33	27	57	26	116	34	77	40
MTH 245	-	-	-	-	16	50	15	20
MTH 246	-	-	-	-	-	-	-	-

CHART IV b

ATTRITION RATE

COURSE	Winter 68 O.E.	Winter 68 A.R. %	Fall 68 O.E.	Fall 68 A.R. %	Winter 69 O.E.	Winter 69 A.R. %	Fall 69 O.E.	Fall 69 A.R.
MTH 100	587	58	573	38	452	57	562	50
MTH 090	190	49	349	29	140	39	342	43
MTH 091	229	53	342	54	251	49	243	56
MTH 110	731	50	778	54	682	54	722	55
MTH 111	330	50	260	37	319	50	219	58
MTH 112	91	45	164	45	82	48	279	48
MTH 121	372	47	430	40	337	50	490	50
MTH 122	161	53	84	49	156	56	114	45
MTH 201	747	25	753	22	734	22	916	33
MTH 203	81	31	105	31	132	35	141	40
MTH 210	17	18	-	-	18	28	-	-
MTH 221	28	50	32	41	25	48	30	53
MTH 225	187	44	128	36	169	37	145	37
MTH 230	334	48	216	41	244	45	220	49
MTH 240	147	36	181	36	137	30	189	39
MTH 241	101	39	57	46	124	35	68	51
MTH 245	-	-	-	-	-	-	36	25
MTH 246	11	64	-	-	6	33	-	-

O.E.-Original Enrollment.

A.R.-Attrition Rate.

CHART V a

SURVEY OF ATTRITION RATE IN COMPARING "C" AND "D" STUDENTS

PART "D"

MTH 090 Total making D - 56
Total continuing - 12

Grade	No.	%	
A	0	0	
B	0	0	
C	0	0	
D	2	16.7	
F	8	66.7	83.4 %
W	2	16.7	
WP	0		
WF	1		
WD	0		
W	1		

The 12 students were distributed in these courses:

9 in MTH 091
2 in MTH 100
1 in MTH 121

MTH 091 Total making D - 45
Total continuing - 19

Grade	No.	%	
A	0	0	
B	0	0	
C	1	5.3	
D	4	21.2	
F	9	47.7	74.2 %
W	5	26.5	
WP	2		
WF	1		
WD	0		
W	2		

The 19 students were distributed in these courses:

10 in MTH 100
8 in MTH 121
1 in MTH 110

PART "C"

MTH 090 Total making C - 106
Total continuing - 29

Grade	No.	%	
A	0	0	
B	0	0	
C	4	13.8	
D	3	10.3	
F	13	44.8	75.8 %
W	9	31.0	
WP	2		
WF	0		
WD	0		
W	7		

The 29 students were distributed in these courses:

16 in MTH 091
7 in MTH 100
2 in MTH 110
4 in MTH 121

MTH 091 Total making C - 50
Total continuing - 31

Grade	No.	%	
A	0	0	
B	3	9.7	
C	7	22.6	
D	9	29.0	
F	7	22.6	38.7 %
W	5	16.1	
WP	4		
WF	0		
WD	1		
W	0		

The 31 students were distributed in these courses:

14 in MTH 100
17 in MTH 121

CHART V b

MTH 100 Total making D - 102
Total continuing - 46

Grade	No.	%	
A	0	0	
B	2	4.3	
C	4	8.7	
D	6	13.0	
F	16	34.7	71.7%
W	17	37.0	
AUD	1	2.1	

WP	6
WF	1
WD	1
W	9

MTH 100 Total making C - 133
Total continuing - 36

Grade	No.	%	
A	3	3.5	
B	5	5.8	
C	19	22.1	
D	23	26.7	
F	22	25.6	41.9%
W	14	16.3	

WP	7
WF	1
WD	1
W	5

FALL "D" (Continued)

The 46 students were distributed in these courses:

43 in MTH 110
2 in MTH 121
1 in MTH 225

FALL "C"

The 86 students were distributed in these courses:

79 in MTH 110
4 in MTH 121
1 in MTH 112
2 in MTH 225

MTH 110 Total making D - 98
Total continuing - 39

Grade	No.	%	
A	0	0	
B	0	0	
C	5	12.8	
D	8	20.5	
F	7	17.9	66.6%
W	19	48.8	

WP	5
WF	2
WD	4
W	8

The 39 students were distributed in these courses:

MTH 111
MTH 112
MTH 225

MTH 110 Total making C - 127
Total continuing - 69

Grade	No.	%	
A	1	1.4	
B	4	5.6	
C	16	23.2	
D	12	17.4	
F	20	28.9	52.1%
W	16	23.2	

WP	6
W	10

The 69 students were distributed in these courses:

63 in MTH 111
6 in MTH 225

CHART V c

MTH 111 Total making D - 38
Total continuing - 20

Grade	No.	%	
A	0	0	
B	1	5	
C	2	10	
D	0	0	
F	3	15	} 85%
W	14	70	
WP	6		
WF	0		
WD	2		
W	6		

The 20 students went to:
MTH 230

MTH 111 Total making C - 71
Total continuing - 42

Grade	No.	%	
A	0	0	
B	2	4.8	
C	9	21.4	
D	4	9.5	
F	10	23.8	} 40.5%
W	16	38.1	
AUD	1	2.4	
WP	8		
WF	0		
WD	4		
W	4		

The 42 students went to:
MTH 230

MTH 112 Total making D - 21
Total continuing - 7

Grade	No.	%	
A	0	0	
B	0	0	
C	1	14.3	
D	0	0	
F	3	42.8	185.6%
W	3	42.8	
WP	1		
WF	0		
WD	1		
W	1		

The 7 students went to:
MTH 230

MTH 112 Total making C - 52
Total continuing - 38

Grade	No.	%	
A	0	0	
B	3	7.9	
C	10	26.3	
D	9	23.7	
F	6	15.8	} 42.1%
W	10	26.3	
WP	3		
WF	0		
WD	0		
W	7		

The 38 students were distributed:
37 to MTH 230; 1 to MTH 240

MTH 121 Total making D -
Total continuing - 18

Grade	No.	%	
A	0	0	
B	0	0	
C	2	11.1	
D	4	22.2	
F	8	44.4	} 66.6%
W	4	22.2	
WP	0		
WF	1		
WD	0		
W	3		

The 18 students to: 17 in MTH 122
1 in MTH 225

MTH 121 Total making D - 102
Total continuing - 34

Grade	No.	%	
A	0	0	
B	3	8.8	
C	4	11.8	
D	8	23.5	
F	11	32.3	} 55.8%
W	8	23.5	
WP	4		
WF	2		
WD	2		
W	0		

The 34 students to: 4 in MTH 110
30 in MTH 122

CHART V d

MTH 122 Total making D - 4

None continued

MTH 122 Total making C - 16
Total continuing - 5

Grade	No.	%	
A	0	0	
B	0	0	
C	2	40	
D	0	0	
F	2	40	} 60 %
W	1	20	
WP	0		
WD	0		
WF	1		
W	0		

The 5 students went to: MTH 221

MTH 230 Total making D - 30
Total continuing - 10

Grade	No.	%	
A	0	0	
B	0	0	
C	3	30	
D	0	0	
F	4	40	} 60 %
W	2	20	
I	1	10	
WD	0		
W	2		

The 10 students went to: MTH 240

MTH 230 Total making C - 40
Total continuing - 23

Grade	No.	%	
A	0	0	
B	1	4.3	
C	5	21.7	
D	6	26.1	
F	5	21.7	} 47.8%
W	6	26.1	
WP	3		
WF	0		
WD	2		
W	1		

The 23 students went to: MTH 240

MTH 240 Total making D - 23
Total continuing - 11

Grade	No.	%
W	11	100 %

All 11 students dropped Mth 241

MTH 240 Total making C - 40
Total continuing - 28

Grade	No.	%	
A	0	0	
B	4	14.3	
C	7	25	
D	6	21.4	
F	5	17.8	} 39.2%
W	6	21.4	
WP	2		
WF	0		
WD	1		
W	3		

All 28 went to MTH 241

CHART V e

TOTAL DISTRIBUTION

Total making D - 496

Total continuing to higher course:
182 (36.3 %)

Grade	No.	%	
A	0	0	
B	3	1.65	
C	18	9.89	
D	24	13.18	
F	58	31.87	74.18 %
W	77	42.31	
I	1	.55	
AUD	1	.55	
TOTAL	182	100.00 %	

WP	20
WF	6
WD	8
W	43

TOTAL DISTRIBUTION

Total making C - 737

Total continuing to higher course:
385 (52.3 %)

Grade	No.	%	
A	4	1.05	
B	25	6.49	
C	83	21.56	
D	80	20.77	
F	101	26.23	49.87%
W	91	23.64	
AUD	1	.26	
TOTAL	385	100.00%	

WP	39
WF	4
WD	11
W	37

SUMMARY: Percentage to Continue - 36.3 % with D. Of these, 74.8 % W and F

Percentage to Continue - 52.3 % with C. Of these, 49.9 % W and F

RECOMMENDATION FROM COMMITTEE:

Students do not seem to benefit from continuing with grade of D. We would recommend reinstatement of prerequisite of C before going on to next course.